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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,883

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Frank Jones

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EXAMINER

THOMPSON, CAMIE S

ART UNIT

PAPER NUMBER

1794

MAIL DATE

DELIVERY MODE

03/03/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,883	Applicant(s) JONES ET AL.	
	Examiner Camie S. Thompson	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment filed 12/4/09.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-19,22-27,30-47,49,50,53-60 and 62 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-19,22-27,30-47,49,50,53-60 and 62 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

1. Applicant's amendment and accompanying remarks filed December 4, 2009 are acknowledged.
2. Examiner acknowledges amended claims 2, 5, 31,-32, 42, 49-50 and 53-54.
3. Examiner acknowledges cancelled claims 4, 20-21, 28-29, 48, 51-52 and 61.
4. The rejection of claim 4 under 35 U.S.C. 112, second paragraph is overcome by applicant's amendment.
5. The objection to claim 42 is overcome by applicant's amendment.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 31-47 and 49-50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 31-47 and 49-50 are rendered indefinite because it is unclear if the composite 10585883

comprises only the fiber-reinforced polymeric matrix or the composite is a two-part system comprising (i) the fiber-reinforced polymeric matrix and (ii) the detection means.

Regarding claims 31-47 and 50, the word "means" is preceded by the word(s) "detection" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. It is unclear as to what is provided for the detection of the presence of at least one damaged area of the composite material.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-4, 10, 12-16, 18-21, 23-24, 26-33, 49-52, 54-55, 57 and 60-62 are rejected under 35 U.S.C. 102(b) as being anticipated by Turpin, U.S. Patent Number 4,954,195.

Turpin discloses a process for increasing the damage tolerance in a composite without the loss of possibility or mechanical properties wherein the process includes mixing a thermoplastic material with a high glass transition temperature such as polyimide with a hot thermoset resin such a epoxy resin and with employing about 5 to 40% of the thermoplastic material by weight of the mixture of the two resins (see abstract and reference claim 7). Turpin also discloses that the hot resin dispersion is then applied to fiber reinforcement such as carbon fiber tapes to form laminates or prepregs (see reference claim 10). Additionally, Turpin discloses that upon curing the thermosetting resin at elevated temperatures, the thermoplastic materials dissolve in the thermoset resin forming a composite with no definable boundary interfaces between the thermoplastic and thermosetting resins (see column 2, line 53-column 3, line 34).

10. Claims 1-2, 4-5, 10, 12-16, 18-24 and 26-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Wiseman et al., U.S. Patent Number 5,306,773.

Wiseman discloses a moldable resin composition comprising a thermosetting unsaturated polyester resin and a mixture of thermoplastic polymers of vinyl acetate and epoxy resin (see

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abstract). It is disclosed in column 5, lines 6-32 that the resin composition can include fiber reinforcement such as carbon fibers of a glass fiber veil mat. Reference claim discloses that the fiber-reinforced resin composition moldable at room temperature comprises 50 to 75 percent thermosetting unsaturated polyester resin and about 10 to about 40 percent weight of reinforcement fiber.

11. Claims 1-2, 4, 10-16, 18-24 and 26-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiba et al., U.S. Patent Number 5,952,435.

Chiba discloses a composite material comprising a mixture of an epoxy resin and an aromatic polycarbonate thermoplastic resin (see column 3, lines 31-35). Additionally, Chiba discloses that the composite comprises a reinforcing fiber wherein the reinforcing fiber such as carbon or glass fiber (see reference claim 7). Chiba also discloses that an acid anhydride is used as a curing agent for the epoxy resin (see reference claim 1). Figures 1A-B disclose the volume ratio containing the thermoplastic resin as required by the present claims.

Double Patenting

12. Claims 1-3, 5-19, 22-27, 30-47, 49-50, 53-60 and 62 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-35 of copending Application No. 11/577,968. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in both applications recite a composite material comprising a fiber reinforced polymeric matrix system wherein the matrix

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system comprises a mixture of a thermoplastic resin and a thermosetting resin. Additionally, the claims in both applications recite a composite material with a damage detection system.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

13. Applicant's arguments filed December 4, 2009 have been fully considered but they are not persuasive. Applicant argues that the co-pending application was filed after the present application. While the present application is older than the co-pending application, the present application is not in condition for allowance. Therefore, the obviousness-type double patenting rejection is maintained. Applicant has amended claims 31-47. It remains unclear in claim 31 if the composite is drawn to a (i) a fiber reinforced matrix comprising a thermosetting polymer and thermoplastic polymer with the composite being the detection means or if the composite is drawn to a (i) a fiber reinforced matrix and a (ii) detection means. It is unclear if the composite is a one component or a two component system. It is unclear as to what the means is to detect the presence of at least one damaged area. The rejection is maintained.

Applicant argues that there is no indication that it remains in solution after the curing of the resin. Claim 1 is very broad. Applicant argues that Turpin is directed to a process for increasing damage tolerance in thermoset composites by controlled solubility of a thermoplastic filler. Applicant argues that Turpin does not teach or suggest that the polymeric matrix comprises a thermosetting polymer and a thermoplastic polymer that together form a solid

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solution. Turpin discloses a composite that comprises a thermoplastic resin and a thermosetting resin with reinforcement fibers and forming a pre-preg which is cured. Turpin discloses a composite that has damage tolerance, as does the composite of the present claims. Turpin discloses a composite with the same components as required by the present claims. Applicant has not provided an guidance as to why the components comprises the composite of the Turpin reference would function differently from that of the same components that are found in the present claims.

Applicant argues that Wiseman does not teach the effect that the thermoplastic is dissolved in the resin and that there is no indication that it remains in solution after curing of the resin. Examiner set forth a reasonable rejection based on the materials that are similar to those used by applicant and would be within the scope of the claims. Applicant argues that the present claims are drawn to a single phase system that has the ability to heal. Wiseman discloses a moldable resin composition comprising a thermosetting resin and a thermoplastic resin with fiber reinforcement. Wiseman provides the same composition as required by the present claims. Applicant postulate that the materials of the Wiseman reference do not function in the claimed capacity but provides no specific reasons as to why. Applicant's arguments are not persuasive as there is not specific guidance as to why the composition of the Wiseman reference comprising the same materials as required by the present claims would not function in the claimed capacity. Merely stating that the prior art materials do not form "a solution" or a "self-healing structure" is insufficient to rebut the examiners prima facie case.

The examiner notes that care must be taken in the arguments provided as they may provide support for a future scope of enablement rejection under 35 U.S.C. 112, first paragraph

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as one needs to be able to determine based on the specification and art as a whole what materials function in the claimed capacity. Applicant has not provided any guidance for the claimed materials to function in the form of "a solution" or a "self-healing structure" outside of the specific materials recited. .

Applicant argues that the claimed invention is directed to a single phase system. Applicant also argues that the Chiba reference does not anticipate the claimed invention. Chiba discloses a composite material comprising a mixture of an epoxy resin and an aromatic polycarbonate thermoplastic resin wherein the mixture comprises reinforcing fiber. Chiba discloses the same components required for the composite. The rejections are maintained.

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camie S. Thompson whose telephone number is 571-272-1530. The examiner can normally be reached on Monday-Friday 8:00 am - 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Camie S Thompson/

Examiner, Art Unit 1794

/D. Lawrence Tarazano/

Supervisory Patent Examiner, Art Unit 1794